MECHANICAL DATA SHEET

SHELL AND TUBE HEAT EXCHANGER

Plant Item No.	Data Sheet No.
24590-PTF-ME-FEP-COND-00001A	24590-PTF-MED-FEP-P0003

R10275202

Project:	**RPP-WTP**	Description:	**Waste Feed Evaporator Primary Condenser**
Project No:	**24590**	P&ID:	**24590-PTF-M6-FEP-P0003**
Site:	**Hanford**	Process Data Sht:	**24590-PTF-MEC-FEP-00001**
Process flow diagram:	**24590-PTF-M5-V17T-P0004002**	Manufacturer Name	**Framatome ANP /Northwest Copper Works, Inc.**

General Data

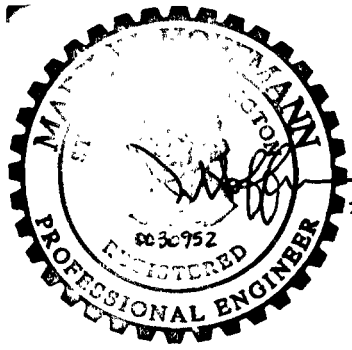
Quality Level	**QL-1 (note 2)**	TEMA (Class/Type)	**B**	*
Seismic Category	**SC-I**	Flow Type (Counter current, etc)	*	
Design Code	**ASME VIII, Div 1**	Heat Exchanger Duty Btu/hr	*	
Code Stamp	**Yes**	Heat Exchanger Area ft^2	**4270****	
NB Registration	**Yes**	ΔT (LMTD/Corrected LMTD) °F	*	*

ISSUED BY RPP-WTP PDC 3/10/04 INIT DATE

Thermal/Hydraulic Data

		Shell Side		Tube Side	
Fluid Name		**Steam**		**Cooling Water**	
Fluid Quantities: Total	lbm/hr	**3968****		**891,278***	
Condensable Vapor (In/Out)		*	*	*	*
Liquid		*	*	*	*
Noncondensable		*	*	*	*
Temperature (In/Out)	°F	*	*	**75**	**93**
Specific Gravity		*	*	*	*
Viscosity	cP	*	*	*	*
Molecular Weight, Vapor		*	*	*	*
Molecular Weight, Noncondensable		*	*	*	*
Specific Heat	Btu/lbm-°F	*	*	*	*
Thermal Conductivity	Btu/hr-ft-°F	*	*	*	*
Latent Heat	Btu/lbm @ °F	*		*	
Inlet pressure	psia	**1.3****		**59.7**	
Tube side Velocity	ft/s	*		*	
Pressure Drop (Actual)	psi	*		*	
Fouling Resistance (Min)	$hr\text{-}ft^2\text{-}°F/Btu$	**0.0015****		**0.0044 ****	

Note: Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.



3/19/04

This Bound Document Contains a Total of 2 Pages.

Rev	Description	By	Checked	Approved	Date
0	Issued for Permitting Use	E. Le	D. Reinemann	J. Julyk	3/17/04

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SHELL AND TUBE HEAT EXCHANGER

Plant Item No.	Data Sheet No.
24590-PTF-ME-FEP-COND-00001A	24590-PTF-MED-FEP-P0003 Rev. 0

Mechanical Data

		Shell Side		Tube Side	
Design Pressure (Max/Min)	psig	50	Full vacuum	100	Full vacuum
Design Temperature (Max/Min)	°F	250	49	250	49
Corrosion Allowance	inch	0.04		N/A	
Erosion Allowance	inch	N/A		N/A	
Shell OD / ID	inch	50**		Overall Dimensions (H x W x L) inch	50x50x276**
Total No. of Tubes		1020**		Tube OD inch	1**

Material Data

Shell	SA 240 316L SS	Shell Cover	SA 240 316L SS
Channel/Bonnet	SA 240 316L SS	Channel Cover	SA 240 316L SS
Tube	SA 269 316L SS (0.065" thick)	Floating Head Cover	N/A
Stationary Tube Sheet	316L SS	Floating Tube Sheet	N/A
Shell Side Gaskets	N/A	Tube Side Gaskets	316 SS spiral wound
Partition Seals	N/A	Baffles/Supports	SA 240 316L
Insulation	N/A	Forgings (Shell side)	SA 182 F316L
Bolting	SA193B8M	Forgings (Channel)	SA 182 F316L

Construction Data *(To be determined by the supplier when not specified by the buyer)*

Cross Baffle Type	*	% Baffle Cut (Dia.)	*	Spacing (c/c) inch	*
Bypass Seal Arrangement	•	Longitudinal Seal Type	*	Expansion Joint Type	•
Inlet Nozzle ρV^2	*	Bundle Entrance ρV^2	•	Bundle Exit ρV^2	*
Tube Support Type	*	U-bend Support Type	*	Weight of Bundle lbf	*
Operating Weight lbf	*	Full of Water lbf	•	Weight of Shell lbf	*

Notes

• **To be determined by Seller**

** **To be verified by Seller**

Notes: (1) All welds are continuous to avoid crevices, weld surface finish is descaled as laid.

(2) All welded construction on process side only.

(3) Tube to tubesheet joint shall be strength welded.